PROJECT TITLE : ANALYTICAL INVESTIGATIONS

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SERVICES FOR OTHER GROUPS

- Upon request from QC, Freon was analyzed in 4 brands of our competitors (FMO).
- The SH index of 8 experimental cigarettes of project LEAR and of 141 TLA cigarette samples was determined (MUM).
- DMN/NPY and NNN/NNK/NAtB were determined in the mainstream and sidestream smoke of 2 experimental cigarettes of project PROTAGORAS (MUM) (1).
- Trace metals K, Na, Fe, Zn, Mn, Pb, Co, Cu and Mo were analysed in six tobacco extract samples submitted by Biotechnology (MUM) (2).
- Phosphate (6), phosphate/sulfate (13) and alcohol (27) analyses were performed upon request from Product Development and Biotechnology (ETL).
- Headspace analyses were carried out on reference and rejected tipping paper samples upon request from QC (FMO) (3). Additional peaks were found in the chromatogram of rejected sample. Results were confirmed by extraction/GC^2 (YVG).
- Five triacetin samples were analysed for QC by GC^2 (4) (5).
- Free and protein-bound amino acids were analysed in six tobacco extracts provided by Biotechnology and in five RL samples of project TASK (JJP) (6).
- Volatile fatty acids (acetic, propanoic, butanoic) were analysed in 17 RL extract samples by GC (JJP).
- CO and NO mainstream and sidestream smoke deliveries of nine experimental cigarettes of projects SAVOURY and PROTAGORAS were determined (JJP) (7) (8).
- Two fused silica Superox 0.1 coated capillary columns were prepared on request (YVG).

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METHOD DEVELOPMENT

Polar fused silica capillary columns (YVG) :

A 22 m x 0.3 mm ID fused silica capillary column was coated with Superox 0.1 by the static method. Tests showed an excellent separation efficiency and improved thermal stability over normal Carbowax equivalents. Additional tests were run with tobacco extracts and smoke.

In addition a new technique is presently being investigated to obtain more thermally stable and unextractable films of polar phases on fused silica capillary columns. The technique investigated involves in-situ polymerization of silicon phases by peroxides (9) (10).

Fermentation monitoring with HPLC (JJP) :

An easy and rapid method for monitoring the tobacco fermentation products ethanol, methanol, acetic, propanoic, butanoic and lactic acid, glucose, fructose as well as sorbic acid by HPLC is presently being worked out.

SERVICE FOR PROJECT TASK

After discussion with Product Development further organoleptic examination was made of 17 RL samples. Repeated quantitative analysis of these samples for 12 carboxylic acids indicated a positive correlation between propanoic, phenyl acetic and total acid concentration and undesirable organoleptic properties (Figures 1, 2 and 3) (11) (12).

No correlation was found for lactic acid (Fig. 4) and the other acids which have so far been analysed. No apparent correlation was found between amino acid concentration and negative taste properties (MUM, ETL, JJP).

REFERENCES

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(2) Memo from Murray-M. to Berney-J., February 11, 1982.
(3) Memo from Fink-W. to Balliger-P., February 10, 1982.
(4) Memo from Schwarb-A. to Genoud-Y., January 24, 1982.
(5) Memo from Genoud-Y. to Schwarb-A., February 24, 1982.
(6) Memo from Piadé-J. to Berney-J., February 17, 1982.
(7) Memo from Piadé-J. to Ghiste-P., February 1, 1982.
(8) Memo from Piadé-J. to Bindler-G., February 19, 1982.
(9) Sandra-P. et al, HRC and CC 4 (1981) 411.
(10) Blomberg-L. et al, HRC and CC 4 (1981) 578.
(11) PME Monthly Progress Report, January 1982, p. 7.
(12) Memo from Murray-M. to Nyffeler-U., March 4, 1982.

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Fig. 1

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Fig. 2

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Fig. 3

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Fig. 4

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